**Castle Engineering** LLP
P.O. Box 1572
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Swift Current, Saskatchewan
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July 10, 2018

Castle Eng. #: 18-1786

Geoff Heschel
GH The Leveller
P.O. Box 323
Morse, Sask. CA.
S0H 3C0

Mr. Heschel,

Castle Engineering was retained to complete the load capacity analysis of the GH The Leveller. As per the information provided the GH Leveller is constructed using SAE Gr.5 bolts with a total leveler height of 4" (102mm) including 3" of gr.5 bolt and a 3/16" top and bottom plate.

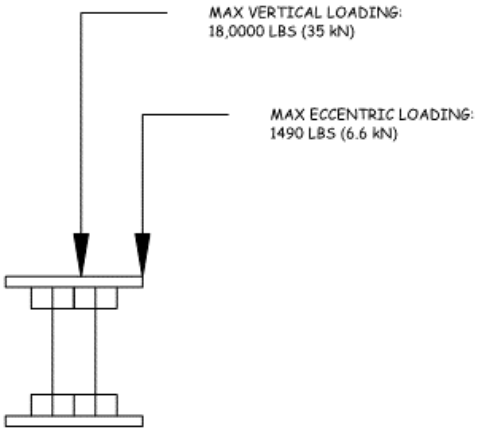
**Design parameters:**

| | |
|---|---|
| Gr. 5 Bolts Yield Strength: | 36 ksi |
| Effective sold core area: | 0.5 $in^2$ (322 $mm^2$) |
| Bending Stress Factor ϕb: | 0.67 |
| Compression Factor ϕc: | 0.60 |
| Design valid for total length of leveler bolt: | 3" (75 mm) |

**Analysis design capacities:**

| | |
|---|---|
| Max Vertical Loading (at center of leveler): | 18,000 lbs (35kN) |
| Max Shear Eccentric Loading (at edge of disc): | 1,490 lbs (6.6kN) |
| Factored Shear Resistance, Vr: | 62.7 kips (279 kN) |

It is recommended that the below sticker be fastened to each GH The Leveller.




Sticker Template:

CASTLE ENG.
PROJ.# 18-1786

GH THE LEVELLER
MATERIAL: SAE GR.5 BOLT
DESIGN BOLT LENGTH: 3" (75mm)

MAX. VERT. LOAD: 18,000LBS (35 kN)
MAX. ECCENTRIC LOADING: 1490 LBS (6.6kN)

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Sincerely,

Carolyn Emperingham, P.Eng.

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